

WHAT IS CLAIMED IS:

1. A blocked immunoglobulin comprising an antibody portion and a Protein A portion.

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2. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises at least one light chain variable region of an antibody.

10 3. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises at least one heavy chain variable region of an antibody.

4. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises at least one light chain variable region and at least one heavy chain variable region of an antibody.

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5. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises two light chain variable regions of an antibody.

20 6. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises two heavy chain variable regions of an antibody.

7. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises two light chain variable regions and two heavy chain variable regions of an antibody.

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8. The blocked immunoglobulin of claim 1 wherein said antibody portion comprises at least one antigen-reactive fragment of an antibody.

30 9. The blocked immunoglobulin of claim 1 wherein said Protein A portion comprises at least one protein A compound.

10. The blocked immunoglobulin of claim 9 wherein said Protein A compound is a fragment of Protein A.

5 11. The blocked immunoglobulin of claim 1 further comprising a solid support to which said immunoglobulin is attached.

12. The blocked immunoglobulin of claim 11 wherein said immunoglobulin is attached to said solid support through a covalent linkage.

10 13. The blocked immunoglobulin of claim 11 wherein the antibody portion of said immunoglobulin is attached to said solid support.

14. The blocked immunoglobulin of claim 11 wherein the antibody portion of said immunoglobulin is attached to said solid support through a tether.

15 15. The blocked immunoglobulin of claim 11 wherein the Protein A portion of said immunoglobulin is attached to said solid support.

20 16. The blocked immunoglobulin of claim 11 wherein the Protein A portion of said immunoglobulin is attached to said solid support through a tether.

25 17. The blocked immunoglobulin of claim 11 wherein the solid support is made of a material selected from the group consisting of acrylamide, agarose, cellulose, nitrocellulose, glass, polystyrene, polyethylene vinyl acetate, polypropylene, polymethacrylate, polyethylene, polyethylene oxide, polysilicates, polycarbonates, teflon, fluorocarbons, nylon, silicon rubber, polyanhydrides, polyglycolic acid, polylactic acid, polyorthoesters, polypropylfumarate, collagen, glycosaminoglycans, and polyamino acids.

30 18. The blocked immunoglobulin of claim 11 wherein the solid support further comprises a member selected from the group consisting of thin film,

membrane, bottles, dishes, fibers, woven fibers, shaped polymers, particles, beads, microparticles, and a combination of the foregoing.

19. A composition comprising at least one blocked immunoglobulin of
5 claim 1 in a suitable carrier.

20. The composition of claim 19 comprising at least two blocked
immunoglobulins of claim 1 in a suitable carrier.

10 21. The composition of claim 20 wherein said blocked immunoglobulins
have different specificities.

22. A composition comprising at least one blocked immunoglobulin of
claim 11 in a suitable carrier.

15 23. The composition of claim 22 comprising at least two blocked
immunoglobulins of claim 11 in a suitable carrier.

20 24. The composition of claim 23 wherein said blocked immunoglobulins
have different specificities.

25 25. An microarray comprising a solid support attached to a plurality of
blocked immunoglobulins of claim 1.

26. The microarray of claim 25 wherein the antibody portion of each of
said blocked immunoglobulins has the same antigenic specificity.

27. The microarray of claim 25 wherein the antibody portion of at least two
of said blocked immunoglobulins have different antigenic specificities.

28. The microarray of claim 25 wherein the antibody portion of each of said blocked immunoglobulins has a different antigenic specificity.

29. The microarray of claim 25 wherein said solid support is made of a
5 member selected from the group consisting of acrylamide, agarose, cellulose, nitrocellulose, glass, polystyrene, polyethylene vinyl acetate, polypropylene, polymethacrylate, polyethylene, polyethylene oxide, polysilicates, polycarbonates, teflon, fluorocarbons, nylon, silicon rubber, polyanhydrides, polyglycolic acid, polylactic acid, polyorthoesters, polypropylfumarate, collagen,
10 glycosaminoglycans, and polyamino acids.

30. The microarray of claim 25 wherein said microarray is a bead or microparticle.

15 31. The microarray of claim 25 wherein the solid support is porous.

32. A process for forming a blocked immunoglobulin comprising contacting an antibody with a Protein A compound under conditions promoting the binding of said Protein A to said antibody.

20 33. The process of claim 32 wherein said protein A compound is Protein A.

25 34. The process of claim 32 wherein said protein A compound is a fragment of Protein A.

35. The process of claim 32 wherein said antibody forms a covalent linkage with said Protein A compound.

30 36. The process of claim 32 wherein said antibody is attached to a solid support prior to contacting with said Protein A compound.

37. The process of claim 36 wherein said solid support is porous.

38. The process of claim 36 wherein said solid support is in the form of
5 beads or microparticles.

39. The process of claim 36 wherein said solid support is composed of a
material selected from the group consisting of acrylamide, agarose, cellulose,
nitrocellulose, glass, polystyrene, polyethylene vinyl acetate, polypropylene,
10 polymethacrylate, polyethylene, polyethylene oxide, polysilicates,
polycarbonates, teflon, fluorocarbons, nylon, silicon rubber, polyanhydrides,
polyglycolic acid, polylactic acid, polyorthoesters, polypropylfumerate, collagen,
glycosaminoglycans, and polyamino acids.

15 40. The process of claim 36 further comprising quenching the solid
support prior to contacting the antibody with the Protein A compound.

41. The process of claim 40 wherein said antibody and said Protein A are
contacted at a temperature of at least about 37°C.

20 42. The process of claim 41 wherein said contacting occurs for at least
about 30 minutes.

43. The process of claim 42 wherein following said contacting with Protein
25 A the blocked immunoglobulin is further contacted with a blocking agent other
than a Protein A compound.

44. The process of claim 43 wherein said blocking agent other than a
Protein A compound is bovine serum albumin (BSA).

45. The process of claim 36 wherein said Protein A compound is Protein A.

46. The process of claim 45 wherein said Protein A is present at a 5 concentration of at least about 0.5 mg/ml.

47. The process of claim 45 wherein said Protein A is present at a concentration of about 0.5 mg/ml.

10 48. A process for detecting an analyte in a sample comprising contacting an analyte with a blocked immunoglobulin of claim 1 wherein the antibody portion of said blocked immunoglobulin is specific for said analyte and detecting the binding of said analyte to said blocked immunoglobulin.

15 49. The process of claim 48 wherein said sample comprises at least two antigenically different analytes.

50. The process of claim 48 wherein said analyte is contacted with more than one blocked immunoglobulin.

20 51. The process of claim 50 wherein the antibody portion of at least two of said blocked immunoglobulins exhibits a different antigenic specificity.

25 52. The process of claim 48 wherein said sample comprises a plurality of analytes contacted with a plurality of blocked immunoglobulins comprising antibody portions having at least two different antigenic specificities.

53. The process of claim 48 wherein said blocked immunoglobulin is attached to a solid support.

30 54. The process of claim 53 wherein said solid support is porous.

55. The process of claim 53 wherein said solid support is in the form of beads or microparticles.

5 56. The process of claim 53 wherein said solid support is composed of a material selected from the group consisting of acrylamide, agarose, cellulose, nitrocellulose, glass, polystyrene, polyethylene vinyl acetate, polypropylene, polymethacrylate, polyethylene, polyethylene oxide, polysilicates, polycarbonates, teflon, fluorocarbons, nylon, silicon rubber, polyanhydrides, 10 polyglycolic acid, polylactic acid, polyorthoesters, polypropylfumerate, collagen, glycosaminoglycans, and polyamino acids.

57. A process for detecting an analyte in a sample comprising contacting an analyte with the microarray of claim 25 wherein the antibody portion of at least 15 one of the blocked immunoglobulins on said microarray is specific for said analyte and detecting binding of an analyte to at least one blocked immunoglobulin on said microarray.

58. The process of claim 57 wherein the sample contains a plurality of 20 antigenically different analytes.

59. The process of claim 57 wherein said microarray comprises a plurality of blocked immunoglobulins comprising antibody portions exhibiting a plurality of different antigenic specificities.

25 60. The process of claim 59 wherein said process is part of an antibody sandwich assay, an enzyme-linked immunosorbent assay, an antibody dipstick assay, an antibody microarray assay, a radioimmunoassay, or a rolling circle amplification assay.

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61. The process of claim 48 wherein said process is part of an antibody sandwich assay, an enzyme-linked immunosorbent assay, an antibody dipstick assay, an antibody microarray assay, a radioimmunoassay, or a rolling circle amplification assay.

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62. The process of claim 48 wherein said process occurs on a column, a plate, a microtitre dish, a dipstick, a cell sample or a tissue sample.

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63. The process of claim 48 wherein said process occurs *in situ*.

64. The process of claim 48 wherein said analyte comprises a rolling circle replication primer and wherein detection of binding of analyte to blocked immunoglobulin is accomplished by contacting said bound analyte with an amplification target circle (ATC) comprising a primer complementary sequence complementary to a portion of said primer under conditions promoting rolling circle amplification and wherein the production of tandem sequence DNA (TS-DNA) indicates the presence of said analyte.

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65. The process of claim 57 wherein said analyte comprises a rolling circle replication primer and wherein detection of binding of analyte to blocked immunoglobulin is accomplished by contacting said bound analyte with an amplification target circle (ATC) comprising a primer complementary sequence complementary to a portion of said primer under conditions promoting rolling circle amplification and wherein the production of tandem sequence DNA (TS-DNA) indicates the presence of said analyte.

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66. The process of claim 64 or 65 wherein said analyte comprises a protein.

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67. The process of claim 48 wherein said blocked immunoglobulin comprises a rolling circle replication primer and wherein detection of binding of

analyte to blocked immunoglobulin is accomplished by contacting said bound analyte with an amplification target circle (ATC) comprising a primer complementary sequence complementary to a portion of said primer under conditions promoting rolling circle amplification and wherein the production of 5 tandem sequence DNA (TS-DNA) indicates the presence of said analyte.

68. The process of claim 57 wherein said blocked immunoglobulin comprises a rolling circle replication primer and wherein detection of binding of analyte to blocked immunoglobulin is accomplished by contacting said bound 10 analyte with an amplification target circle (ATC) comprising a primer complementary sequence complementary to a portion of said primer under conditions promoting rolling circle amplification and wherein the production of tandem sequence DNA (TS-DNA) indicates the presence of said analyte.

15 69. The process of claim 64 or 65 wherein said analyte comprises a protein.

70. A process for detecting analytes, the method comprising an amplification operation,

20 wherein an amplification target circle is coupled to a blocked antibody composition, wherein the blocked antibody composition can interact with an analyte,

wherein the amplification operation comprises rolling circle replication of the amplification target circle to produce tandem sequence DNA.

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71. The process of claim 70 wherein said analyte is a protein.

72. A process for detecting analytes in a sample, comprising:

a DNA ligation operation and an amplification operation,

30 wherein the DNA ligation operation comprises circularization of an open circle probe, wherein circularization of the open circle probe is dependent on

hybridization of the open circle probe to a target sequence, wherein the target sequence is coupled to a blocked antibody composition, wherein the blocked antibody composition can interact with an analyte,

wherein the amplification operation comprises rolling circle replication of

5 the circularized open circle probe to produce tandem sequence DNA.

73. The process of claim 72 wherein said analyte is a protein.

74. A process for detecting analytes, comprising:

10 (a) contacting a blocked antibody composition with a target sample comprising an analyte wherein a target sequence is coupled to the blocked antibody composition, wherein the blocked antibody composition binds to the analyte,

(b) contacting an open circle probe with the target sample, to produce an

15 OCP-target sample mixture, and incubating the OCP-target sample mixture under conditions that promote hybridization between the open circle probe and the target sequence in the OCP-target sample mixture,

(c) contacting a ligase with the OCP-target sample mixture, to produce a ligation mixture, and incubating the ligation mixture under conditions that promote

20 ligation of the open circle probe to form an amplification target circle,

(d) contacting a rolling circle replication primer with the ligation mixture, to produce a primer-ATC mixture, and incubating the primer-ATC mixture under conditions that promote hybridization between the amplification target circle and the rolling circle replication primer in the primer-ATC mixture, and

25 (e) contacting DNA polymerase with the primer-ATC mixture, to produce a polymerase-ATC mixture, and incubating the polymerase-ATC mixture under conditions that promote replication of the amplification target circle,

wherein replication of the amplification target circle results in the formation of tandem sequence DNA.

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75. The process of claim 74 wherein said analyte is a protein.